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COMMONWEALTH OF MASSACHUSETTS
State Senate
Committee on Ways and Means
STATE HOUSE, BOSTON 02133

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The growth in pension costs will consume more than half of total revenue growth for cities and towns by the end of this decade and will actually outstrip the growth in revenues for ten communities, according to a study released by Senator Chester G. Atkins (D-Concord), Chairman of the Senate Committee on Ways and Means.

The study, entitled "Proposition 2½ and Funding Pension Costs," prepared by the staff of the Ways and Means Committee, reveals that total pension costs are rising faster than revenues, which are held down to 2.5 percent annual growth under Proposition 2½. By 1990, communities with their own retirement boards will be forced to dedicate an average of 58 percent of new revenues to cover their growth in pension obligations.

Two significant trends emerge from the study. First, larger cities in Massachusetts will experience a greater increase in pension costs as a percentage of revenue growth than smaller communities. Second, the number of disability pensions awarded at the local level, which are more costly than regular retirement pensions, has a positive effect on the rise in pension costs. The greater the number of disability pensions awarded in proportion to the overall number of retirements for a given community, the greater the increase in overall pension costs and the larger a share of revenue growth which will be consumed by pension costs.

No relationship was found between the size of a community and disability pension awards over time. The importance of disability awards to pension

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cost growth means that decisions made by the local pension board have a significant long-range impact on growth in pension costs.

This pension funding problem is hitting communities like a second shock wave After adjusting to reduced revenues imposed by Proposition 2½, local governments are now being hit with increasing expenditures for pension obligations.

The ten communities whose pension cost growth will exceed revenue growth are listed below. The figures to the right show the ratio of pension costs to total levy growth projected for 1990.

Community	Pension Costs/Levy Growth
Athol	1.00
Boston	1.10
Chelsea	1.28
Chicopee	1.20
Fall River	1.17
Holyoke	1.25
Lynn	1.08
New Bedford	1.05
Springfield	1.06
Worcester	1.12

The ratio for all cities and towns in included in Appendix C. of the study.

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Impact Study: Proposition 2½ and Funding Local Pension Costs

by the Senate Committee on Ways and Means

Within this decade, the annual increase in pension costs to ten cities and towns in the Commonwealth will exceed the increase in the real estate tax levy allowed under Proposition 2½. All new revenues in these communities will be used to fund pension cost growth. All communities in the Commonwealth will feel a similar pinch as a larger and larger share of their revenue growth will go to fund pension liabilities. On the average, the communities with individual retirement boards will pay 58 percent of their revenue growth in FY 1990 for annual pension cost increases. By the year 2000, nearly three-fourths of all tax levy growth will be needed to cover pension costs.

This pension funding problem is hitting communities like a second shock wave, after the readjustments they have made to the initial implementation of Proposition 2½. Virtually every community had to make some adjustments to cope with the initial shock wave caused by reductions in levy limits imposed on them. Now, for a variety of reasons, communities are facing a second wave caused by increased expenditures for pensions.

These pension costs are a contractual obligation of the cities and towns and therefore must be paid. The restrictions on tax levy growth to 2.5 percent per year under Proposition 2½ have exacerbated a long-standing problem of funding pensions in Massachusetts. Since pension costs are rising at a rate faster than the allowable tax levy growth, it is inevitable that every city or town will face a pension funding problem in the foreseeable future. For the larger municipalities in the Commonwealth, the problem is here now. There is considerable disagreement as to the causes of this difficulty. However, it is clear that the larger the city, the more likely it is that the pension cost increases will consume a large share of the tax levy growth.

Another important factor is the percentage of persons retiring under accidental disability. Since these pensioners receive higher pensions for longer periods of time, the number of these claims has a great effect on pension liability. The percentage of disability pensions also is positively related to the ratio of pension cost increases to the marginal tax levy, but is not as great a factor as population. It should be noted that the overall disability rate is not statistically related to the population. Further studies on the percentage of new disabililty claims allowed from 1978-1981 show a significant correlation both to the pension/tax levy ratio and the population statistics.

These data suggest that the larger cities in terms of population have the most immediate pension funding problems, but also that all cities and towns will be affected. Further, the

problems related to disability claims are not uniform within the system. Hence, it is local decision-making, not the overall pension disability system, that needs reform. Finally, there appears to be a problem in the larger cities over the last few years.

The Public Employee Retirement System

The retirement system for public employees is authorized and created in accordance with Chapter 32 of the General Laws. Within this legal framework, 104 separate retirement boards administer independent systems for state employeees, teachers, various cities, towns, and counties, and various other government instrumentalities such as the Massachusetts Turnpike Authority. Chapter 32 was enacted in 1946, but many boards were in existence before that date.

There are three types of pensions which public employees can receive: superannuation, ordinary disability, and accidental disability. In addition, certain benefits are available to the survivors of public employees. The amounts payable to an employee depend on the employee's age, length of service, type of pension, category of job, and survivors' benefits. The system is funded in part by employee contributions and in part by appropriation of the government units involved. Employees hired before January 1, 1975 contribute five percent of their gross wages to the system; those hired after that date contribute seven percent. This amount is invested and accumulated over time and constitutes about 15 percent of the pension payable at retirement. The remainder of the pension is paid by the governmental body for which the employee worked.

Massachusetts retirement systems are, for the most part, on a pay-as-you-go system. There is only a minimal attempt to set aside funds to meet future obligations. Consequently, the amount which the systems are estimated to owe in the future, which is known as the "unfunded pension liability," is substantial and growing. A recent estimate of the total unfunded liability for Massachusetts systems is $9.1 billion. (See Appendix A.)

Chapter 559 of the Acts of 1977 established a voluntary funding program for city and town systems. Since then $12.6 million has been set aside. However, after the passage of Proposition 2½, the amount of such funding declined by 32 percent. (See Appendix B.)

Annual Pension Cost Liabilities

While the $9.1 billion in total unfunded pension liability of is a significant amount, it does not give a sense of the timeframe of the problem. What is immediately important is how pension costs will impact budgets in the near future.

A. Comparison to Payroll

One way to evaluate the cost of a pension system is to compare the annual unfunded liability, which must be appropriated, to the payroll cost of the governmental unit. The pension cost/payroll (PC/P) ratio allows comparisons between communities of different size and also gives a sense of the relationship of the costs for active, as opposed to retired, personnel.

One result of Massachusetts' pay-as-you-go system is that the PC/P ratio is expected to increase over time. For example, the state retirement PC/P ratio for FY 1983 is approximately 14.5 per-

cent and is expected to rise to 28.3 percent by the year 2000. Table 1 lists the PC/P ratios for the major retirement board groupings.

Table 1: Change in Pension Costs as a Percentage of Payroll: FY 1983 - FY 2000

	FY 1983	FY 1990	FY 2000
State Employees	14.5%	19.6%	28.3%
Teachers	14.3	18.4	29.0
Boston	24.7	28.7	31.1
Other Locals	18.4	25.2	32.3
All Combined	16.8	22.1	30.1

While the ratios for local boards are relatively high compared to the state and teachers' systems, they are quite variable. A sampling of these communities is found in Table 2.

Table 2: Change in Pension Costs as a Percentage of Payroll: Local Boards FY 1983 - FY 2000

	FY 1983	FY 1990	FY 2000
Danvers	9.7 %	14.7%	23.9%
Plymouth	12.7	18.3	28.7
Falmouth	13.8	22.8	32.8
Greenfield	14.8	19.5	27.6
Andover	15.2	22.7	35.1
Concord	16.4	22.7	30.0
Brockton	16.5	24.9	32.3
Needham	16.5	22.1	30.8
Hingham	17.7	25.5	35.0
Lexington	17.7	25.9	33.9
Quincy	18.0	25.6	32.4
Fairhaven	18.1	24.5	33.5
Methuen	18.5	25.4	34.1
Shrewsbury	18.8	26.3	36.8
Springfield	19.0	24.6	32.5
Newburyport	19.5	27.4	36.5
Belmont	20.5	28.7	40.8
Southbridge	20.9	25.5	33.8
Worcester	21.4	29.9	38.9
Pittsfield	21.4	29.9	38.9
Somerville	22.9	29.6	33.6
Clinton	23.3	30.6	38.9
Revere	23.5	33.1	39.9
Fall River	23.5	29.5	32.0
Lawrence	24.8	31.1	33.2
Lynn	25.7	34.2	37.5
Chelsea	32.3	39.2	42.0

These figures show that under the current pay-as-you-go system, by FY 2000 pension costs to all systems will be equal to 30 percent of the payroll of active employees. As the number of retirees and the cost of pensions grow relative to the number of active employees and their pension contributions, the unfunded liability of the state, cities, and towns will increase.
This situation is similar to the federal Social Security system, which is in difficulty because the number of retirees is becoming

larger relative to the number of workers who contribute to the system.

B. Comparison to Tax Levy

However, unlike the Social Security system, which is funded by payroll contributions, the local public employee pension systems are largely dependent on revenues generated by the property tax. Under the provisons of Proposition 2½, the flexibility for increasing property tax revenues has been severely restricted. These restrictions are having such an impact that communities are having immediate difficulties in meeting their pension cost needs.

For example, those communities which have individual retirement systems were more likely to have tax levy cutbacks required in the second and third years of Proposition 2½. Hence, as pension costs increased, these legal requirements further exacerbated the Proposition 2½ tax levy reduction. Table 3 shows how Proposition 2½ impacted communities with their own retirement boards differently from those that are part of county systems.

Table 3: Comparison of the Effects of Proposition 2½ on Various Types of Retirement Boards

	Total	Municipalities with Individual Boards	Municipalities with County Boards
FY 1983 (second year)			
Levy Increase	317	59 (19%)	258 (81%)
Levy Decrease	34	26 (76%)	8 (24%)
FY 1984 (third year estimated)			
Levy Increase	340	74 (22%)	266 (78%)
Levy Decrease	11	11 (100%)	0 (0%)

These immediate effects of Proposition 2½ will be followed by additional pension funding difficulties in the near future. Since under Proposition 2½ the tax levy cannot increase more than 2½ percent a year, the growth of pension costs will shortly overwhelm the ability of cities and towns to meet these demands with tax levies. Between FY 1983 and FY 1990, the pay-as-you-go contribution is expected to increase at an annual rate of 8.6 percent, as compared with the 2.5 percent tax levy limit. For the cities and towns, this means that the money needed just to fund increases in pension costs will eventually exceed the revenue increases allowed under the tax levy. Hence, there will be no new locally-generated revenues available for anything but pension cost increases. Nothing will be available for payroll increases, heating cost increases, other inflation-driven items, and expansion of services.

By FY 1990, ten communities will have pension cost increases which will meet or exceed the allowable tax levy increase. Those communities which will have a PC/TL ratio equal to or greater than 1.00 are shown in Table 4.

Table 4: Communities With a Pension Cost/Tax Levy (PC/TL) Ratio Greater Than 1.00 in FY 1990

Community	PC/TL
Athol	1.00
Boston	1.10
Chelsea	1.28
Chicopee	1.20
Fall River	1.17
Holyoke	1.25
Lynn	1.08
New Bedford	1.05
Springfield	1.06
Worcester	1.12

The entire list of PC/TL ratios can be found in Appendix C. By FY 1990, the average PC/TL for all communities with individual retirement boards will be 0.58.

Factors Related to High PC/TL Ratios

In order to determine what factors contributed to the high PC/TL ratios, the Senate Committee on Ways and Means undertook the following study. The projected PC/TL ratio for FY 1990 was compared to three other factors: the population of the community according to the 1980 census, the percentage of retired employees receiving disability pensions in FY 1979 (as developed by a Kennedy School of Government Workshop on local pension systems), and the percentage of new disability pensions out of the total

of new pensions from 1978-1981 (as developed by the Massachusetts Municipal Association). The two different disability measures were used because the first (percentage of retired employees who are disabled) gives a measure of disabilities allowed over the long run, while the 1978-1981 disability data measure any short run disability changes.

To determine the significance of these factors, a statistical formula known as a correlation coefficient was applied to the data for the various individual retirement boards. Because of the unavailability of certain of the data for certain retirement boards, two different correlation coefficients were computed using different subsets of the 85 individual retirement boards.

The results showed that there was a very strong relationship between the PC/TL ratio in FY 1990 and the 1980 census figures. The two correlation coefficients (r) were from 0.62 to 0.45 and were significant at the $p < .001$ level. (That is, there was less than one chance in a thousand that the r value was not significant. The maximum r value is 1.00.) Hence, there is no question that large populations are an important factor in determining that there will be a pension funding problem in FY 1990.

The relationship between the PC/TL ratio and the "long term" disability factor also existed but was not as strong as the population factor. The r value was 0.45 and $p < .0001$.

However, there was no significant relationship between the 1980 census and the long-term disability percentage. The r value was 0.14 and had a $p > .10$, which is not considered statistically significant. Hence, these findings indicate that both levels of

population and percentages of disabled retirees influence the PC/TL in 1990, but that population and percentage of disabled are independent of each other. In fact, the combined correlation of population and long-term disability rates to PC/TL is .70, which is highly significant.

To analyze whether there have been any shifts in more recent disability determination patterns, a correlation study was done using the percentage of disabilities determined in 1978-81 as a "short-run" disability measure. The correlation (r) between the PC/TL in FY 1990 and this short-run disability factor was .34, which had a $p < .01$. The two disability factors were also highly correlated at $r = .57$ ($p < .001$). The short-run disability factor was somewhat correlated with the 1980 census figures ($r = .27$, $p < .02$). Thus it appears that there is a slight shift in more recent disability determinations. The larger cities tend to be having higher short-run disability rates. However, this factor is less significant in predicting the FY 1990 PC/TL ratio than the population level and the long-run disability factor.

The conclusions that one can draw from these studies are limited. Correlations do not necessarily imply causation. Furthermore, other underlying factors may be the real causative agents. For example, population may not be as significant as housing conditions or crime rates in determining disability rates, but may be correlated to both factors. Nevertheless, the data imply that population is closely related to pension funding difficulties in the near future. Also, the long-term disability

rate is an important factor. Furthermore, the variability of the long-term disability rate suggests that it is not the disability system that is a problem, rather it is individual variations among cities and towns in the administration of the system that lead to funding problems.

data of the Retirement Law Commission

	State	Teachers	Boston*	Other Local Boards	Total
Actuarial liability - active members	$1,444,526,000	$1,886,919,000	$ 902,480,000	$2,420,199,000	$ 6,654,124,000
Actuarial liability - retired members	1,292,207,000	1,259,347,000	760,165,000	1,714,941,000	5,026,660,000
Total actuarial liability	$2,736,733,000	$3,146,266,000	$1,662,645,000	$4,135,140,000	$11,680,784,000
Assets	682,163,000	807,785,000	278,232,000	786,094,000	2,554,274,000
Unfunded actuarial liability	$2,054,570,000	$2,338,481,000	$1,384,413,000	$3,349,046,000	$ 9,126,510,000

* Includes Boston teachers, for whom the Commonwealth has assumed the obligation for retirement payments in the past.

Special funding under Chapter 559 of the Acts of 1977:

COMMUNITY	1979	1980	1981	1982
Acton	$ 28,000	$ 56,000	$ 81,000	$ 53,000
Arlington	250,000	315,000	380,000	none
Bellingham	30,000	none	none	$445,000
Braintree	397,000	354,000	460,000	none
Brookline	none	300,000	300,000	none
Cohasset	50,000	50,000	50,000	50,000
Concord	50,000	50,000	175,000	100,000
Dedham	25,000	180,000	320,000	none
Fall River	none	1,000,000	600,000	pending
Framingham	none	none	100,000	none
Lexington	100,000	200,000	200,000	200,000
Maynard	25,000	18,000	18,000	18,000
Milton	40,000	80,000	121,000	none
Needham	85,000	175,000	340,000	620,000
Norwood	none	none	150,000	350,000
Plymouth	none	50,000	85,000	none
Stoughton	25,000	none	none	none
Walpole	none	none	80,000	none
Watertown	none	400,000	300,000	200,000
Wellesley	255,000	341,000	629,000	902,000
Westwood	none	none	165,000	165,000
Berkshire County a. Florida	10,000	5,000	none	none
b. Lenox	none	none	10,000	none
TOTAL	$1,370,000	$3,574,000	$4,564,000	$3,103,000
CHANGE FROM PRIOR YEAR	---	+161%	+41%	-32%

APPENDIX C: Pension cost increase as a ratio of allowable tax levy increase for FY 1990

Adams	0.56
Amesbury	0.53
Andover	0.31
Arlington	0.51
Athol	1.00
Attleboro	0.43
Belmont	0.46
Beverly	0.41
Boston	1.10
Braintree	0.48
Brockton	0.71
Brookline	0.50
Cambridge	0.65
Chelsea	1.28
Chicopee	1.20
Clinton	0.59
Concord	0.27
Danvers	0.54
Easthampton	0.47
Everett	0.57
Fairhaven	0.34
Fall River	1.17
Falmouth	0.34
Fitchburg	0.71
Framingham	0.44
Gardner	0.61
Gloucester	0.41
Greenfield	0.48
Haverhill	0.95
Hingham	0.34
Holyoke	1.25
Hull	0.46
Lawrence	0.96
Leominster	0.51
Lexington	0.25
Lowell	0.72
Lynn	1.08
Malden	0.63
Marblehead	0.45
Marlborough	0.37
Maynard	0.23
Medford	0.62
Melrose	0.46
Methuen	0.37
Milford	0.37
Milton	0.37
Montague	0.28
Natick	0.47
Needham	0.41
New Bedford	1.05
Newburyport	0.36
Newton	0.42
NAttleborough	0.43
Northampton	0.45
Northbridge	0.40
Norwood	0.44
Peabody	0.67
Pittsfield	0.79
Plymouth	0.29
Quincy	0.94
Reading	0.44
Revere	0.82
Salem	0.51
Saugus	0.38
Shrewsbury	0.41
Somerville	0.84
Southbridge	0.46
Springfield	1.06
Stoneham	0.46
Swampscott	0.37
Taunton	0.93
Wakefield	0.46
Waltham	0.65
Watertown	0.51
Webster	0.37
Wellesley	0.40
West Springfield	0.42
Westfield	0.63
Weymouth	0.57
Winchester	0.52
Woburn	0.43

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